Last Updated: November 16, 2001

USDA-APHIS
KARNAL BUNT WORKSHOP
Oklahoma City, Oklahoma
October 31-November 1, 2001

I. Purpose:

The purpose of the Karnal Bunt Workshop is to develop a strategy for dealing with Karnal bunt (KB). The objective is to bring stakeholders and cooperators together to discuss approaches for addressing issues of disagreement regarding the disease, developing methods for facilitating wheat trade, and maintaining the livelihoods of producers and other parties affected by KB.

The meeting in Oklahoma City, Oklahoma, during October 31 and November 1, 2001, was called to address concerns that surfaced this year after late season detections of KB in North Texas. The detections presented new challenges for USDA regarding implementation of regulations, certification procedures, and compensation issues for situations found in North Texas.

We have attempted to capture the information that was presented and discussed at the workshop, in addition to the many comments and concerns that were raised. We realize we may have not included every comment and concern that surfaced at the meeting, but we believe that the following information sufficiently captures the comments and concerns that were voiced.

II. Opening Comments:

Bill Hawks, USDA, Under Secretary, Marketing and Regulatory Programs

Mr. Hawks began his appointment with USDA on May 23, 2001, just prior to the KB issue surfacing in North Texas. Mr. Hawks acknowledged that KB is a weak pest and he questioned if KB should continue to be considered a quarantine pest, even if our foreign trading partners consider the disease an export issue.

Mr. Hawks stated that participants in the workshopCincluding Federal and State officials and industry representativesCwere there to discuss the current KB program. He emphasized the need for participants to be open and frank about the issues, determine what issues can be agreed upon, and then move on to those that need further consideration. The workshop presents an opportunity for attendees to work together to identify and overcome barriers affecting the production, handling, and export of wheat because of KB. Among the Federal participants, officials from USDA=s Farm Services Administration attended the workshop to discuss

compensation problems and APHIS officials attended to discuss KB regulations. Ms. Helene Wright, USDA=s KB contact person with the Office of the Secretary, also attended. Prior to the workshop, Ms. Wright lead a team to Texas to review program and compensation issues associated with that program.

Mr. Hawks closed his remarks by reminding the participants that KB has had a significant negative impact on U.S. wheat growers, their business, and their livelihood. Accordingly, he urged participants to be sensitive to the plight of farmers in KB-affected areas.

Dennis Howard, National Association of State Departments of Agriculture (NASDA), Commissioner, Oklahoma Department of Agriculture
Commissioner Howard spoke of NASDA=s existing KB policy statement calling for the deregulation of the disease as a quarantine pest. He pointed out that Oklahoma is the second largest wheat production State in the Nation, producing 34 bushels of wheat per acre last year. He said that approximately 50 percent of Oklahoma=s wheat was exported overseas last year. An outbreak of KB in Oklahoma could have a devastating effect on wheat producers and adversely impact the State=s export markets. Not only would the wheat industry suffer from lost grain sales, but the cattle industry and market could be negatively impacted. In OklahomaCas in TexasCmany acres of wheat are used as pasture for grazing cattle and there are some concerns about transported cattle carrying the KB pathogen in their intestinal tracts.

Bill Callison, President, National Plant Board (NPB)
Mr. Callison explained that in 1998, the NPB worked in cooperation with NASDA to develop a position statement on KB, which was subsequently adopted as NASDA policy. This policy called for the deregulation of KB within 3 years. Mr. Callison urged that the current NASDA policy, which can be viewed on NASDA=s Web site, be used as a guide for moving forward towards deregulation. NASDA is expected to revisit this published policy statement soon. KB detections in North Texas were the first such detections to be made outside of previously regulated areas since 1997. This situation was discussed at the 75th meeting of the NPB, and seed was identified as the major vehicle for KB spore movement. But the use of only certified seed may not be a practical solution to this problem considering the Nation=s various farming practices.

KB is a very complex problem, with the lack of clear agreement about program issues and direction. This year, Kansas and Oklahoma implemented new State regulations on the movement of seed into their States. We must work towards deregulation of KB and negotiate changes to overly restrictive foreign export requirements. Many options to address KB need to

be explored and discussed. For instance, should the current program be maintained or modified, should we reclassify KB as a regulated non-quarantine pest, should we deregulate the disease unilaterally, and can we deregulate while preserving exports?

Joe Miller, American Farm Bureau (AFB)
Mr. Miller talked about the major impacts of KB on the grain production industry. The disease is known to be of minor consequence, but is also a major problem for producers and exporters. Trade is always important, but especially now because of the depressed wheat prices. Accordingly, the AFB recommends that APHIS: 1) Set up an advisory panel of grain producers and industry groups; 2) Compensate all growers and handlersCincluding seed handlersCaffected by KB regulations; 3) Find a way to market contaminated seed; 4) Develop a program to prevent KB=s spread (i.e., allow cattle grazing along with compensation, just like the CRP program) and get diseased grain out of production; and 5) Fund research on KB-resistant wheat and biotechnology varieties. Mr. Miller concluded his presentation by stating we must work together.

III. Discussion Topics:

A. Harmonizing Domestic and International Interest in Plant Health Programs
Presenter: Dr. R. Dunkle, Deputy Administrator, Plant Protection and Quarantine (PPQ), APHIS

The principal role of PPQ has been to prevent the introduction, spread, and establishment of plant pests that may damage crops or plants in the environment. A major benefit of fulfilling this mission is the strengthened marketability of U.S. agricultural products in domestic and international markets. In this sense, it has become clear that a plant pest that limits export opportunities can be as damaging as a pest that causes any other type of loss to growers. Such is currently the case with Karnal bunt.

In some cases it is possible to act soon enough after introduction to eradicate a pest before it can become established and spread. This has frequently been the case with fruit fly infestations. But, even in the cases where a pest can be quickly detected and eradicated, there will usually be impacts of some sort on growers and/or residents in the infested area. Frequently it will be necessary to establish at least a temporary regulated area and place some restrictions on the movement of host plant material and, in some cases, other items such as farm equipment. In spite of our best attempts to minimize the effect of our regulations and, in some cases, to provide compensation, it is likely that growers and/or residents in the infested area will experience some hardships as a result of the actions that we must take to contain the new pest.

In many cases, growers who are affected by regulations and eradication programs will feel unfairly singled out, which may not be an unreasonable response. However, there is no question that despite our best efforts to minimize the effects of eradication and control programs, we will not be able to entirely insulate growers from at least some of the effects of these programs. This reaction is even more likely when we are dealing with a pest that usually causes little or no apparent crop damage, but affects our ability to export.

This has clearly been the case with the KB infestations that have occurred since 1996. For the most part KB is unlikely to cause significant crop damage or losses. But, since U.S. growers frequently export as much as half the wheat crop, any pest that can limit these exports is as damaging to the growers as a pest that causes losses in the field. And it will be just as important for us to take actions to mitigate the effects of these pests as it is to mitigate the effects of pests that cause significant crop damage.

It is difficult enough for growers to accept the consequences of being in the area where a new pest is detected that causes obvious damage (i.e., citrus canker, plum pox, and fruit flies). It is even more difficult when the only apparent consequence of the pest is an effect on exports. At the same time, if we did not take the measures necessary to prevent the spread of the disease and keep it from being introduced into the export wheat stream, there would likely be severe consequences for our exports.

Attitudes concerning KB are very much a case of Awhere you stand depends on where you are standing.@ Most growers in areas where KB is present do not see it as being a big pest problem, while growers where the disease is not present, which is in more than 99 percent of the country, do not want to see any additional spread. USDA seeks to design a program that strikes a fair balance between impacts and benefits to growers on both sides of the line.

B. History, Policy and Goals of the Karnal Bunt Program
Presenter: Dr. C. Schwalbe, Assistant Deputy Administrator, PPQ, APHIS

An important component of the USDA safeguarding program involves restrictions on the importation of certain commodities through Foreign Quarantine Notices that are published in Title 7, Part 319 of the Code of Federal Regulations (7 CFR 319). These regulations prescribe prohibition of certain commodities or, alternatively, the conditions for mitigating the risk of their importation. Regulations exist for cotton, sugarcane, logs/lumber, rice, nursery stock, fruits and vegetables, cut flowers, and a number of other commodities. 7 CFR 319.59 deals explicitly with

the wheat diseases: foreign strains of flag smut and KB. This regulation was first published in 1981 and it effects the prohibition of wheat from Afghanistan, India, Iraq and Pakistan. In 1982/1983 prohibition from Mexico was added to the rule.

Thus, since 1981, the goal of the USDA has been:

> *CFR 319.59 Yin order to prevent the introduction of Karnal bunt into the United States from any country or locality, it is necessary to prohibit the importation into the United Sates of certain articles from certain foreign countries and localities.*

Since the 1980's, research in support of this goal has been conducted by the Agricultural Research Service=s (ARS) Foreign Disease and Weed Laboratory at Ft. Detrick, Maryland. Also in 1983, an emergency action plan was prepared, and, in the early 1990's, a pest risk assessment (PRA) was written. Importantly, during the period 1993-1995, survey for KB was conducted in Kansas, Nebraska, North Dakota, Oklahoma, and South Dakota.

On March 8, 1996, KB was detected for the first time in the United States in a seed sample in Arizona and since then, USDA policy has been guided by the following goals:

- *Protect U.S. wheat producers who don=t have Karnal bunt*
- *Provide the best possible options to those affected by the disease*
- *Protect the movement of wheat into domestic and international markets*
- *Promote the flow of pertinent disease information to reassure our trading partners about the health of exported U.S. wheat*

Deregulation, or overcoming the classification of KB as a quarantine pest, has emerged since 1997 as a goal endorsed by the American Phytopathological Society, the National Association of State Departments of Agriculture, the National Plant Board, NFACT (the coalition of New Mexico, Florida, Arizona, California, and Texas), and the U.S. Wheat Associates. While the program has been highly successful in maintaining wheat exports, efforts at convincing our trading partners to drop KB requirements on imported wheat have met with little success.

C. 1996-2000 Program Results/Findings
Presenter: Bruce Shambaugh, Program Manager, PPQ, APHIS

In 1996, when KB was detected in Arizona, a declaration of extraordinary emergency was issued. Quarantines were subsequently put in place in Arizona, California, New Mexico, and

Texas. Extensive surveys were conducted in regulated areas and a National KB survey was developed.

In 1997, three classifications were established for regulated areas. These classifications were: 1) restricted fields where no planting of KB host material was allowed; 2) surveillance areas, which were designated as higher risk areas where grain and seed were regulated; and 3) restricted areas for seed where only seed was regulated. A two-tier sampling system was used to sample for KB. The presence of bunted kernels was adopted as the standard for regulating grain, while seed was held to a spore standard. San Saba County, Texas, became regulated as a result of a positive bunted kernel find.

The same regulation and sampling schemes used in 1997 were used in 1998. There was a low occurrence of KB in regulated areas that year.

In 1999, the majority of the restricted area for seed was deregulated and planting restrictions on restricted fields were removed. The regulated area consisted of either a 3- or 6-mile area around bunted kernel fields.

In 2000, the regulated area was reduced to a 3-mile buffer around infected fields. Required treatments for harvest equipment had also been relaxed.

D. 2001 Program Findings
Presenter: Tim NcNary, Regional Program Manager, PPQ, APHIS

The national survey was established to document where KB is not known to occur. Forty-two States are involved in the KB national survey. They contributed approximately 1,400 wheat samples, or 1 sample for every 1,000,000 bushels of county production. To date, 1,445 samples have been collected with 1,294 negative and 151 pending identification. Labs in Oklahoma, Kansas, Oregon, and Arizona have performed the analysis. Survey results from California=s Palo Verde Valley identified 93 negative and 3 positive samples. The 3 positive samples represent 142 acres of KB-positive fields. In Arizona, 315 fields were tested and 92 were found to be positive. The 92 samples represent 4,080 acres of positive fields. New Mexico plowed down 16 fields in 1996, and all fields sampled negative this year. In San Saba County, Texas, of 150 fields sampled, 58 fields (38 percent) were positive. In Archer, Baylor, Throckmorton, and Young Counties, 27 fields (15 percent) out of 179 fields sampled were positive. Of 613 on-farm storage areas sampled, 34 were positive, and 10 out of 501 seed samples tested positive.

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On May 24, 2001, a suspect sample was submitted from an elevator in northern Texas and was confirmed to be positive for KB by May 31, 2001. The next day an Emergency Action Notice (EAN) was issued. Throckmorton, Archer, and Baylor Counties, Texas, were regulated respectively on June 1, June 19, and June 23, 2001.

Concerns/Comments:

- the use of infested wheat and how it could be sold or used domestically

- clarification of the standard used to determine the presence of KB

- deregulation of KB

- management practices to reduce the incidence of KB

- adequate compensation for farmers and harvesters

- the adequacy of the national survey

- delivery of a PRA on KB

- timely and consistent survey results and regulatory action

APHIS is working to speed up sampling and response time for KB. It was recommended that quarantines and regulated areas should be minimized and that regulations should be made compatible with the needs of producers. Survey practices have eased over time because of the low incidence of KB. Survey sample results from the regulated area are known prior to commingling at a facility. APHIS would like to find a method of sampling for the national survey that would determine results prior to commingling grain. It was also recommended that good management practices could reduce the incidence of KB. The sale of infected wheat to millers was suggested as an option for wheat that cannot currently be exported. APHIS recommended the formation of task forces to deal with pressing issues brought up in the discussion. Also, the use of climatic data in the construction of the PRA was recommended.

E. Research Activities and Accomplishments
Dr. R. Bennett, National Program Leader, ARS

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The ARS started research on KB detection in 1982. They developed size selective sieving and later developed the portable polymerase chain reaction (PCR) diagnostic assays. ARS has also looked for resistant germplasm. Four major priorities have been established for needed research on KB.

Priority 1 was improving identification of KB. Research was conducted on: 1) PCR detection assays, 2) improving teliospore germination protocols to speed up molecular assays, and 3) identifying proteins that could be used as targets for immuno-detection antibodies.
Priority 2 was to better clarify the basic biology of KB so that strategies for disease management and fungicide development could be created. ARS seeks to: 1) determine the duration of teliospore viability, 2) quantify teliospore production and look at the effects of microclimate on germination, and 3) collect data to determine how soil parameters like temperature and moisture cause the disease to occur. ARS is also interested in determining how long spores can survive and if there are certain levels of KB spores necessary in the soil for disease to occur.

Priority 3 was to characterize the genetics and pathogenicity of *Tilletia* pathogens. This will help determine host range.

Priority 4 was to develop strategies for the management of KB through fungicides and host resistance. ARS is also interested in using biotechnology to create resistant plants.

Questions arose regarding the feasibility of developing resistant strains to an organism with such a low incidence of disease. It was also mentioned that it would be a financial mistake to use fungicides because of the low incidence of KB and the high cost of fungicidal treatment.

F. Methods Development Activities and Accomplishments
Presenter: Dr. R. Sequeira, PPQ, Center for Plant Health Science and Technology (CPHST), APHIS

Dr. Sequeira noted that no model is perfect in predicting outbreaks. With regard to KB it was concluded that the likelihood of epidemics in the United States is very low and that KB is not really a pest because it does not affect yield.

The model for predicting KB should evaluate what parts of the country are at risk.

APHIS modeled KB for the United States by examining planting trends and weather and assigning risk zones. It was concluded that KB does best between 15-20^{o} Celsius combined with

the right levels of precipitation. It was concluded that the KB outbreak in Texas was due to anomalous weather and that the general risk of KB outbreaks in Texas is low. Future research should focus on obtaining global climatology data sets to help predict the incidence of KB.

G. Panel Discussion on the Appropriateness of the Program Goals and Objectives Established in 1996 in View of the Experiences and Knowledge Gained Since Then

Panel: B. Balaam, New Jersey Department of Agriculture (Leader); T. O=Connor, National Feed and Grain Association; D. Nelson, North Dakota Department of Agriculture; J. Frahm, U.S. Wheat Associates; and J. Sigg, Arizona Department of Agriculture

Current Goals and Objectives

Panel leader Bob Balaam from the New Jersey Department of Agriculture reviewed the current goals and objectives of the KB program and addressed the panel=s charge to look at the appropriateness of those goals and objectives in light of the experiences and knowledge gained since the goals were established in 1996, when the disease was first detected in the Southwestern United States. The current goal is to ensure that the presence of KB does not threaten the U.S. wheat industry. Current objectives of the KB program as established by the USDA in 1996 include: protect U.S. wheat producers who do not have KB, provide the best possible options for those who are affected by the disease, facilitate the safe movement of wheat into domestic and international markets, and promote the flow of pertinent disease information to reassure our trading partners about the safety of U.S. exported wheat.

Mr. Balaam provided a brief history of the original KB infections in Arizona and how things have developed to the 2001 infections in northern Texas. He pointed out that the United States. currently regulates based on the disease standard and that shipments of grain testing negative for the disease are commingled; there has been some concern expressed that some countries may test exported wheat and regulate based on the pathogen standard and thereby jeopardize the entire exported U.S. wheat crop. Four perspectives on the current KB goals and objectives were presented: domestic wheat markets (National Feed and Grain Association), uninfected States (North Dakota Department of Agriculture), international wheat markets (U.S. Wheat Associates), and infected States (Arizona Department of Agriculture).

Domestic Wheat Market Perspective

Tom O=Connor pointed out that the NGFA supports the goal of the KB program and considers

the objectives appropriate. He expressed concern over the long-term effectiveness of the program to prevent spread and the current compensation policies.

NFGA recommended that USDA include negative-testing wheat from regulated areas in its compensation rules and reconsider adequacy of compensation for facility/equipment cleanup. USDA should continue its efforts to divert potentially contaminated wheat away from export markets. Mr. O=Connor felt that USDA should strengthen measures to contain and Aeradicate@ KB by discouraging the planting of wheat in regulated areas, expanding the cleaning of mechanized harvesting equipment, and encouraging the planting of only seed treated and certified to be free of KB in regulated areas and those at increased risk. He urged USDA to actively strive to remove KB as a quarantine pest in the United States and major U.S. wheat export markets. In the meantime, however, rules should be implemented that are predictable and will mitigate the impact of the disease while it remains a quarantine issue.

Uninfected State Perspective

Mr. Dave Nelson from the North Dakota Department of Agriculture stated that non-infected areas of the US are concerned about the effects of KB on exports, but not about how it affects production. As the United States moves away from the regulation of KB and towards the management of the disease, we should be careful not to use management practices that cause quality problems because this may set a bad example for our trading partners. Regulatory measures will only slow the spread of KB. The USDA needs to provide the best possible options for those that are affected by KB. Markets for affected grain should be found. Also, compensation issues should be addressed. States need to protect their exports. It is prudent to educate our trading partners on the nature of KB; scientific research can facilitate this process.

Mr. Nelson felt that the current goal says nothing about seeking risk-based import restrictions. He said that the goal should be to minimize the adverse affects of KB in the United States. The objectives should be to seek risk-based trade measures by importing countries, reduce domestic spread (market protection goal) through regulatory measures, develop and use best management practices inside and outside of the regulated areas, and ensure timely identification of infected areas.

International Wheat Market Perspective

Jim Frahm of the U.S. Wheat Associates expressed concerns about the current goals. He felt that there is weak support for survey and regulation and these issues could jeopardize our ability to

write additional declarations (ADs) required by our trading partners. He indicated that further spread of KB seems very likely and that efforts to remove importer restrictions have been limited.

The U.S. Wheat Associates suggested that goals be revised in terms of short-term and long-term. From a short-term perspective there is a need to preserve our ability to use the AD. Supporting the national survey, relieving the impact on affected growers and handlers, and using appropriate measures can meet this goal. A second short-term goal is to develop the needed science for issuance of a PRA. Steps required for meeting this goal include identifying conducive conditions, identifying the risk of spread from grain shipments, and identifying the risk of economic loss. A third short-term goal is to limit the spread of the disease.

From a long-term perspective, he urged USDA to establish a plan to deregulate the disease while preserving our exports. This can be accomplished by establishing a date of deregulation and the time line that will lead to that end. USDA needs to use trade patterns and sound science to convince importers to remove restrictions. The deregulation plan should also identify alternative certification options including spore tolerance and a systems approach. A very long-term goal would be to develop resistant varieties.

Infected State Perspective

Joe Sigg from the Arizona Department of Agriculture pointed out that it is difficult to eradicate a spore borne field disease. Consequently the zero tolerance policy is impractical. This policy is not good for Arizona. It was argued that detected versus undetected is a better way of describing KB. It was also argued that States do not have KB, areas do. Consequently, the quarantine is too big if you isolate an entire State.

Arizona has not received adequate compensation. The quarantines are based on what U.S. trading partners will accept, not on science. There is a need for deregulation. Joe mentioned that Arizona participates in the national survey but does not like it; furthermore, there is very little KB in Arizona. Joe argued that U.S. regulations are not timely or consistent and that the quarantine is damaging to the wheat industry, not the disease.

Mr. Sigg proposed the following recommendations: 1) regulate only infected fields, 2) develop an alternative to the quarantine, 3) educate growers about the pathogen, 4) facilitate deregulation, 5) continue to negotiate with trading partners, and 6) evaluate every decision on KB based on its role toward deregulation.

Group Discussion

The primary areas of concern expressed by the workshop participants dealt with 1) the consequences to the producing States reputation and economy of marketing grain that tests positive, 2) the need for the USDA to facilitate negotiations regarding KB and ADs with our trading partners and the need to establish clear leadership for this process, 3) clarification of the survey procedures, and 4) adequate compensation if KB is deregulated. There was also a feeling that the USDA had not performed adequately with regard to its goals in dealing with KB. It was also mentioned that the term Aeradication@ should no longer be used; we cannot expect to eradicate this disease from the United States.

Responses from the USDA were that the Foreign Agricultural Service provides the lead on trade negotiations. Also, the United States needs to deregulate wheat imports for KB if we expect our trading partners to accept our wheat. It was pointed out that other countries are hesitant to accept KB-infested wheat because they do not want a new disease. The reclassification of KB as a regulated non-quarantine pest may be a viable option for facilitating open trading of grain but retaining the regulation of seed. The need for industries in other countries to become engaged in the negotiating process for meaningful progress to be made was emphasized. With regard to compensation, if KB were deregulated, the Secretary of the USDA would no longer have the authorization to grant compensation; only Congress could provide this authorization.

H. Options for Regulatory Measures
Presenter: G. Nash, State Operations Support Officer, PPQ, APHIS

Mr. Nash explained the purpose of the KB regulations (7 CFR 301.89) is to reduce the spread of the disease to other U.S. wheat producing areas and minimize the impact on producers and exporters. The necessity for KB regulations was also discussed as the regulations support export certification based on area freedom, consideration as the official control component to satisfy area freedom, and controls on the movement of infected grain.

Reasons for amending the regulation were presented. These included protecting U.S. wheat exports, minimizing impacts on producers, minimizing spread of the disease, and facilitating global deregulation strategy.

Modifications to the existing regulation are needed to update the technical and operational information in the regulation. A copy of 7 CFR 301.89-3 through 13 was distributed. ***Potential***

changes were outlined to get input from the participants. Potential changes proposed include: 1) To the APlanting@ section, delete fungicide treatment, encourage producers to buy seed that has been tested; 2) Put restrictions on the cultivation of host material in regulated areas; 3) Add to Section 4 Aremove from quarantine after 5 consecutive years of negative finds@; 4) Section 12, ACleaning and disinfection,@ add that harvesting equipment must be cleaned, not disinfected. Seed cleaner and conditioning equipment for KB-infected seed must be cleaned and disinfected before handling negative seed; 5) Section 13, add that storage facilities that stored positive seed must be cleaned and disinfected. Add Acombines require cleaning before leaving infected field,@ add livestock clean out requirements on noncultivated land and cultivated land with compliance agreement, and add cultivated land planted in nonhost crop contiguous with KB-positive field.

Concerns/Comments:

- In the San Saba County program, they don=t buy treated seed, but drive outside regulated area to get seed. Tested seed is cheaper than treated. It costs about a $1.00 per acre more for treated seed. In Montana 90 percent of seed acres are treated to prevent loose smut.

- What is the change going to do? What is the objective, if the spores will be there for 10 years? These are artificial boundaries. Cotton is the only planting option. What are the pathways, and are they worth regulating? How can you regulate the movement of grain through pathways such as wind and birds? Would oats be an option?

- A recent NAPPO publication states that affected fields should be removed from production for 5 years, test negative for bunted kernels and spores in the succeeding crop year, and only then be released. However, affected fields are actually free of KB bunt if it doesn=t rain during anthesis.

- Spores can be moved on the hair of cattle.

- The maximum compensation offered to clean up facilities is only $20,000. This is not enough to offset cleanup costs.

- How are regulations policed? Science needs to show that the actions required under regulation are justified. We need to make it as simple and easy as possible to adhere to KB regulations. There needs to be enough program officials to carry out regulatory activities effectively, like one sampler for every combine crew. Regulations are not practical for large farms.

- Concerns regarding cost and compensation were also expressed.

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I. Farm Service Agency (FSA) Programs Pertinent to the KB Program
Presenters: Elizabeth Hill, FSA Washington and Daren Owens, FSA Director, Texas

Ms. Hill emphasized that compensation will be out soon. Mr. Owens then discussed FSA=s KB program.

The FSA is trying to help by: 1) using aerial photography and GIS to map KB positive farms, 2) encouraging producers to take infected wheat out of production by offering incentives such as placing it in conservation reserves, and 3) providing compensation.

Timely compensation and timely decisions on whether a farmer has KB are critical. KB needs to be diagnosed prior to shipment.

KB has increasingly affected communities and agricultural regions. Produces have already made commitments for the 2002 crop. As a result, wheat will continue to be grown in quarantined fields.

Possible options for assisting producers are to graze the wheat out or to provide economic compensation for farmers. A decision needs to be made soon. The FSA wants to help farmers and support APHIS. It was argued that the market price of wheat dictates future policies.

Comments were then taken from the audience. The comments primarily dealt with adequate compensation. It was recommended that: 1) the FSA give a fixed amount of money, 2) positive fields go into conservation programs, and 3) direct payments be given to recipients.

Concerns/Comments:

- Belief that the disease has spread all over.

- Compensation is not available for combines, and APHIS doesn=t have enough people to keep up with combine crews.

- Cattle grazing is low this year.

- Is a CRP program for positive fields a solution?

- Other concerns include set fees, no compensation for future years, no markets available for spore-positive wheat, no compensation for positive wheat hay, and the availability of compensation for facility cleanup.

J. Options for National Survey and Monitoring
Presenter: Bob Spaide, Surveillance and Emergency Programs Planning and Support, PPQ, APHIS

The purpose of the national survey is to demonstrate which US wheat growing areas are free of KB disease. The national survey is necessary because the information derived from the survey provides information about the presence or absence of the disease, identifies infections in new areas, and identifies areas free of KB.

Sampling and analysis procedures, results to date from the national survey, and reporting into National Agricultural Information System were discussed. Properties of the survey are: 1) it is voluntary and 2) it relies on States. There are questions regarding the validity of the survey and the timeliness of the results.

Proposed options for improvement were presented: 1) no modification; 2) modify the survey to consider synchrony of ideal conditions, consider the current year, and timing; 3) survey fields instead of elevators; 4) combine survey options; 5) eliminate the national survey; and 6) use a monitoring survey which samples areas of high risk to further delimit the infection.

Concerns/Comments:

- What will you do if you don=t get the needed samples?

- There will be a serious problem if elevators won=t cooperate next year.

- Compensation issues need to be worked out.

- Exports are being maintained.

- How do you sample the soil for teliospores?

- Many farmers would oppose soil sampling.

- Growers in regulated areas feel they are being punished.

- Can you identify the survey parameters?

- Increased attention toward survey would be a red flag for industry.

- There was a news release reporting that APHIS should make survey mandatory, rather than voluntary.

- KB wasn=t found in Olney, Texas, during the national survey. However, APHIS did find it in San Saba County by means of the national survey.

- USDA can=t make survey mandatory unless imminent danger exists.

- The Federal Government doesn=t have the authority to go on to private property, but State officials do.

- Survey is protecting export markets. The top 10 U.S. wheat exports markets are Egypt, Japan, the Philippines, Mexico, South Korea, the European Union, Nigeria, Taiwan, Israel, and Colombia. Of the top 10 countries, 6 require KB ADs as per NAPPO pest free area requirements.

- The survey is just not working,

- How and where are survey samples tested?

- Should there be more testing done in northern States like Montana?

- How can we contain KB affected wheat in contaminated rail cars?

- Wheat samples take up to 2 months to be tested. It may take months to pick up samples at the elevator.

- Texas producers still have compensation problems. APHIS said that compensation is coming out next week.

- Need to improve sample accuracy and timeliness of results.

- Adequate and consistent compensation is needed.

- KB deregulation is needed.

- There is confusion about the purpose of the national survey versus survey within regulated areas. Is it to maintain area freedom or is it for early detection?

The responses emphasized that States that do not participate in the national survey may lose the ability to export grain and that States that ship their grain to non-participating State ports may also lose this ability. The purpose of the survey is to keep exports moving and in this regard it has succeeded. Also, the Federal Government does not have the authority to make sampling mandatory except in the case of an extraordinary emergency. It was noted that 6 of the top 10 wheat markets require AD language and that deregulation should be a high priority. The use of weather data to determine pest-free areas may assist in convincing other countries to lift restrictions. Also the timely delivery of compensation was clarified.

K. Panel Discussion on the Strategies for Safely Minimizing the Negative Impact of KB on U.S. Wheat Exports

Panelists: N. Klag, Phytosanitary Issues Management, PPQ (Leader); R. Reimenschneider, FAS; J. Frahm, U.S. Wheat Associates; T. Sim, Kansas Department of Agriculture; and S. Nilakhe, Texas Department of Agriculture

The definition of a quarantine pest was presented. It was mentioned that regulators in other countries do not want a pest if it is not present. The two organizations that deal with international trade are the IPPC (whose mission is preventing the international spread and introduction of pests and harmonizing procedures by establishing standards) and the WTO-SPS Agreement (a forum for high-level trade negotiations and legal resolutions of disputes). A number of concepts relevant to international trade and associated plant pest issues were then presented. Also, country restrictions for KB on the import of U.S. wheat were listed, from the least restrictive to the most restrictive. It was noted that most certification options for wheat grain from the United States were based on the results of the KB national survey.

Background on the US policy on KB after it was found in Arizona in 1996 was presented. The primary objective at that time was to limit the impact on trade. This was done by mounting a massive response to KB using quarantines and other measures. This impressed other countries, but also gave the impression that KB was a serious disease. As a result, U.S. exports have hardly

been impacted. If the goal is to move towards deregulation, then it will be necessary to convince other countries to relax their KB requirements. This will require leverage that can only be provided by science.

A case study of flag smut was then presented to illustrate how a disease could be managed in such a way that other countries would lift their restrictions in time. In this case, quarantines were not enacted because of a strong individual State response to the disease. As a result, the situation was successfully managed. This was compared to the KB situation. A strict domestic quarantine was put in place a number of years ago before it was found in the United States. Since that time, regulatory systems have changed to risk-based systems, but the United States has not changed many regulations to reflect this change of philosophy. Convincing U.S. trade partners to lift restrictions will involve a combination of the use of 1) science, 2) politics, and 3) economics. It was recommended that the United States continue to do business domestically by developing incentives to minimize the spread of KB. With regard to exports, the United States needs to educate its trading partners on KB and its effect on quality.

A presentation regarding ways to reduce the impact of KB on exports was then given. Ways to move forward include: 1) deregulate KB domestically, 2) build on the scientific knowledge of the disease, 3) modify our own restrictions, 4) get importers to remove restrictions, and 5) find alternative ways to certify grain for countries that will not lift their restrictions.

To do these things it will help to 1) have a completed PRA, 2) get a profile of the amount of spores in export shipmentsCif any, 3) relax our own restrictions by minimizing restrictions on wheat for milling, 4) characterize how KB spreads, and 5) review and reduce our own wheat import restrictions from KB-infested countries to get other countries to do the same.

Some countries with restrictions do not produce wheat. Getting them to change their requirements should be the easiest. Also, countries without environmental conditions conducive to KB infection may be amenable to change. A PRA would help here. The last group consists of countries that produce wheat and have the right climatic conditions for KB infection and development. This will be the hardest group to convince to change their regulations. It was recommended that the United States: 1) complete a PRA based on the most current information, 2) determine what amount of spores in a shipment pose a real risk to an importing country, 3) quantify the economics involved to show that restrictions are not warranted since it is a minor disease, 4) identify alternative certification options, and 5) look for KB in importing countries.

A model for deregulating KB over a 6-year period was then presented. It involved three phases

that gradually remove KB regulations.

Concerns/Comments:

- An international conference on KB should be held.

- Shipping KB negative wheat from a regulated area should be easier and the clarity of associated ADs on the Phytosanitary certificate should be improved.

- How is industry is working with USDA to facilitate international trade?

- KB should be deregulated.

- More adequate and fair compensation should be provided.

- KB must be stopped from spreading.

- The domestic KB program must be made more consistent and predictable.

Responses included that APHIS needs to do more to facilitate the movement of KB-negative wheat and to educate domestic and international users about the low impact of KB. Problems associated with the shipment of wheat to Brazil were discussed. U.S. Wheat Associates mentioned that they would work with USDA to facilitate trade. It was concluded that the United States needs to amend its own restrictions on wheat from countries infested with KB.

L. Panel Discussion on Information Gaps that Hamper the Accomplishment of Program Objectives

Panelists: Dr. A. Dowdy, CPHST, PPQ (Leader); Dr. T. Herrman, Kansas State University; Dr. F. Dowell, ARS; Dr. G. Brown-Guedria, ARS; and Dr. R. Noyes, Texas A&M.

The need to find gaps in information technology was discussed. A presentation was given regarding quality management systems (QMS). QMS deal with marketing strategies and certification. QMS is based on a documentation pyramid that includes: 1) development of a manual, 2) standard operating procedures, 3) work instructions, and 4) documentation of commodity movement and appropriate record keeping.

The use of the hazard analysis critical control point concept in the grain marketing system was

then discussed. KB is viewed as a negative quality trait that needs to be eliminated.

In summary, with KB it is necessary to develop management strategies to facilitate global trade. Control points and efficient management strategies need to be developed.

A presentation was then given on detecting and sampling for KB. There is error associated with any sampling scheme, whether it is sampling error or analysis error. Sampling error is usually large compared to analysis error. This error should be quantified with regard to KB. The longer one waits to sample for KB, the greater the error, which increases risk.

Technologies that might be used to sample for KB include: 1) aerial sensors and GIS, 2) combine sensors during the actual harvest, 3) detector for finding bunted kernels prior to trucks being unloaded at the elevator, 4) enzyme-linked immunosorbent assay (ELISA) tests, and 5) removal of bunted kernels using high-speed grain sorting technology.

Knowledge gaps and blind spots were identified as: 1) the need to sample for KB prior to commingling, 2) the need to learn how KB is distributed in the field, and 3) the need to develop early detection technology.

There was a concern from the audience about the lack of consistency in sampling techniques. In response, it was explained that sampling storage is difficult and samplers do the best job possible given the varying circumstances. It was commented that there need to be better sampling rules to follow before harvest occurs.

The next presentation dealt with the use of grain roasters to sterilize KB. Four models were evaluated. All did a satisfactory job at reaching the desired temperatures needed to devitalize KB spores as determined in the laboratory. The grain must be held at or above the target temperature for up to 30 minutes after the initial heating to ensure that spores inside the kernels are killed. Of the four units tested, only one was designed to retain the grain at the proper temperature for an adequate time. The other three units would require an insulated bin or hopper to hold the grain after heating and before cooling or additional processing. Results from preliminary trials were reported. A field test is planned to validate the efficacy of the heat treatment.

The next presentation discussed the development of resistant wheat varieties. It was noted that resistant varieties are economically feasible and environmentally friendly. The steps in developing resistance were explained. Resistant lines have been detected in India and Mexico for

spring wheat. In the United States, spring wheat was screened and appeared to have good resistance qualities. Cultivars of winter wheat, the dominant wheat class in the United States, also were screened. The goals are to identify what lines are susceptible to the pathogen so that they can be phased out while identifying material that exhibits tolerance or resistance.

DNA marker technology also was discussed. The objective is to identify markers linked to KB resistance for use in resistance selection. A few markers associated with resistant genes have been identified. The genes are additive in effect. Consequently, the more genes that are present, the greater the resistance. Research will continue to evaluate wheat cultivars and develop DNA markers.

Comments/Concerns:

Questions from the audience dealt primarily with: 1) delivery of the PRA and who is responsible for its completion, 2) identification of resistant and susceptible varieties, and 3) chemical controls for KB.

Response indicated that data gaps need to be filled before a complete PRA can be generated. A time frame of a few years was given for its completion. Dr. Gordh and Dr. Dunkel are working together to ensure timely delivery of a PRA. This is a multi-agency responsibility. Regarding development of resistant varieties, the HD29 wheat strain from India appears to be a good candidate for resistance genes. Lastly, chemical control is probably not a good way to control KB.

Other information and technology gaps were presented throughout the workshop and include:

- the length of time between sample collection and reporting the results to the producer is too long and allows grain to be commingled;
- we are uncertain whether there are different strains of KB;
- steam treatment of storage facilities and equipment is poorly developed and inconsistently applied;
- procedures for disinfecting grain elevators and conveyances need better development;
- best management practices need to be developed for handling contaminated grain; and
- there is a need for additional research on control and prevention.

The potential of convening an international scientific conference on KB was discussed.

IV. Summary Reports from Panel Discussion Leaders

Comments:

- When will the PRA be done on KB? APHIS is currently working on a PRA. ARS is also committed to conducting a PRA on KB, which will be completed within the next two years.

- The spread potential in the united States is a question that Australia wants answered.

- Weather modeling

- KB resistance is the exception, not the rule. KB races or strains have been identified in India.

- Part of the problem in Texas is that growers hold back wheat seed for planting the next year.

- There was a discussion of black stem rust, and stripe rust. Can you treat for these and KB at the same time? No.

- APHIS has sampled from four separate fields, from different sites in the growing field, all samples were KB positive.

- Procedures and program protocols are inconsistent. Custom cutters are told different things for sampling. It=s hard to sample grain adequately in storage.

- If you tell an Oklahoma farmer he can=t plant wheat on his land, you=ll have a huge backlash. Remember your action will dictate the reaction of the customers. We must look for leadership on these issues.

- Has anyone looked at the cost benefit of regulations versus exports? The first PRA did incorporated cost. USDA, ERS should study and quantify the impact if we unilaterally deregulated. Will there be a point in time that it won=t pay to regulate?

- Are India and Mexico required to write a KB statement on their Phytosanitary certificates? Yes.

- Could we use the San Saba County area for KB-resistance testing in wheat varieties? We need individual best management practices for local producers. KB may have been in the

Texas four-county area longer then San Saba County. KB was in Mexico in early 1970's. San Saba and four-county area have the same production and management practices.

- The majority of wheat planted is from held back seed. We need a screening nursery in the United States.

- Why did we find it when we had the coolest March?

- The heaviest KB-infested wheat had 220 bunted kernels in a 4-pound sample. In 1998, the KB national survey changed to counties of more than a million bushels.

There will be a 50-percent reduction in harvesters entering Texas this next year. Compensation for custom harvesting equipment is needed.

- Field tested negative versus elevator negative. KB doesn=t show up until it=s headed out.

- Not allowing the grazing of wheat would be a disaster.

- You need a ERP, elevator reserve program, for the grain that is not raised.

- Compensation should be approved for commingled grain. There is no compensation for uncertified seed.

- CRP is a 10-year program and the money goes to the owner, not the producer or tenants. Now regulation--if you have KB positive, you will be compensated at $1.80 for the first year, and the 2nd year no compensation.

V. Wrap-up and Next Steps

Helene Wright and Chuck Schwalbe concluded the conference by thanking participants, industry representatives, and regulatory officials for contributing to the resolution of KB issues.

This is the beginning of the next phase. USDA will use the ideas, concerns, and comments from this meeting as a road map to rebuild the program. This is envisioned as a dual track approach: 1) Revamping of the plan to deal with regulated areas until KB is deregulated; and 2) Development of a strategic approach to deregulation while still preserving exports.